

Practice

For use with pages 199–203

1. Which expression is *not* equivalent to $x^3 \cdot x^{-7}$?

A. x^{-4}

B. $\frac{1}{x^4}$

C. $\frac{x^7}{x^3}$

D. $\frac{x^3}{x^7}$

Write the expression using only positive exponents.

2. 14^{-3}

3. 9^{-7}

4. 18^{-5}

5. ab^0

6. $24d^{-1}$

7. m^4n^{-2}

Write the expression without using a fraction bar.

8. $\frac{1}{27}$

9. $\frac{1}{81}$

10. $\frac{1}{63}$

11. $\frac{5}{t^4}$

12. $\frac{6z}{y^5}$

13. $\frac{11p^2}{q^6}$

Find the product. Write your answer using only positive exponents.

14. $22^0 \cdot 22^4$

15. $8^5 \cdot 8^{-6}$

16. $12^{-4} \cdot 12^{-7}$

17. $3w^{-9} \cdot w^4$

18. $9h^{-2} \cdot 5h^{10}$

19. $14m^{-4} \cdot 6m^{-9}$

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20. Scientists have created a 10-nanometer transistor for use in computers. A nanometer is 10^{-9} meter. What is the length of the transistor in meters?

21. Write the number $\frac{1}{10,000,000}$ as a power of 10 using a negative exponent.

22. A milligram is 10^{-3} gram. A kilogram is 10^3 grams. How many times the mass of a milligram is the mass of a kilogram?

Find the quotient. Write your answer using only positive exponents.

23. $\frac{18a^{-20}}{8a^9}$

24. $\frac{30u^{-15}}{34u^{-16}}$

25. $\frac{19k^{-10}}{k^{16}}$

26. $\frac{14r^3}{r^{-8}}$

27. $\frac{c^{10}d^0}{c^9d^5}$

28. $\frac{w^3y^{13}}{w^{11}y^6}$

Use a calculator to evaluate the expression. If necessary, round the result to the nearest thousandth.

29. $(6.5)^{-3}$

30. $(9.4)^{-3}$

31. $(7.4)^{-2}$